



# PATENT SPECIFICATION

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## COMPLETE SPECIFICATION.

### Improvements in or relating to Pipe Couplings.

I, ERIC COOKSON, a British Subject, of 14 Wilkinson Avenue, Park Drive, Blackpool, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to pipe couplings and the like.

In certain applications, for example, in the brewing industry, pipe couplings are used which have to be screwed up and unscrewed very frequently. In such applications damage may be caused to the coupling by repeated use, for example, of a wooden mallet, for tightening up the coupling.

It is an object of the invention to provide a coupling suitable for use in situations where one coupling must be screwed up and unscrewed frequently.

The invention consists of a pipe coupling comprising a pipe end, a second pipe end adapted to interengage with the first for forming a sealed union, a threaded coupling member in the form of a loose collar which fits around the second pipe end while engaging a shoulder thereon and having a screw engagement with the first pipe end, a gear member on the collar and means on one of the pipe ends for the engagement of a key having a pinion thereon for engagement with the gear member on the collar whereby rotation of the key will effect rotation of the collar and hence draw the two pipe ends together by engagement of the collar with the shoulder on the second pipe end.

By suitably arranging the gear ratio a mechanical advantage may be obtained.

Furthermore by providing the key with a suitable handle, a further mechanical advantage can be obtained.

In addition to the satisfactory mechanical advantage ensuring effective coupling it is possible substantially to reduce the risk of damage to the coupling.

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Various arrangements for providing the gear action may be used. An example of these is shown in the accompanying drawings in which:—

Figure 1 is a side elevation of a pipe coupling according to the invention; and

Figure 2 is a section.

In Figures 1 and 2, one pipe end 1 to be connected up is fitted with a threaded union piece 2. The other pipe end 3 to be coupled is fitted with a union piece 4 adapted to interengage with the first union piece to form a sealed union.

To bring the two ends together an internally threaded coupling member 5 which fits around the second union piece in the form of a loose collar is adapted to screw over the externally threaded union piece, while engaging a shoulder 6 on the second union piece, thereby drawing the two union pieces together to effect the seal. Between the shoulder 6 and the end of the union piece 2 a rubber ring 7 is fitted.

As so far detailed, the arrangement is of known construction.

For the purpose of rotating the collar 5, the latter is formed with a gear member 8 and a flange 8a and the union piece 1 is provided with a bracket 9 having a socket 9a which may be engaged with a key 10 having formed thereon a gear or pinion 11 so that the two gears mesh and rotation of the handle of the key effects rotation of the collar. Instead of the socket 9a, the bracket may be provided with a projection adapted to engage an aperture in the key.

More than one socket 9a may be provided so that the key may be fitted in at various points around the pipe, as may be convenient.

The gears may be of the bevel type and a socket for the key may be provided on the union piece carrying the collar in certain circumstances.

In order to ensure that the key is held

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firmly in position, in addition to the socket on one pipe end a slotted bracket may be provided on the other pipe end in which the stem of the key may engage so that the gear of the key is held between the bracket and the socket and prevented from turning in the plane of the pipe.

Alternatively, the key pinion may be inserted between the collar and a bevel gear fixed to the union piece carrying the collar, in which case the key itself will travel round the pipe.

The key, instead of being longitudinally disposed may be arranged transversely and have a worm gear engagement with the collar.

In the various embodiments described the key can be of T-shape and secured to the associated pinion by a universal coupling.

The key can also be an insert for an electric drill instead of being a manual key.

In order to lock the coupling a pin may be passed through suitably aligned holes in the collar and bracket.

Alternatively, a false key member with only, say, two teeth cut in the pinion could be used and locked in position, e.g. by a split pin.

Various other modifications may be made within the scope of the invention.

What I claim is:—

1. A pipe coupling comprising a pipe end, a second pipe end adapted to inter-engage with the first for forming a sealed union, a threaded coupling member in the form of a loose collar which fits around the second pipe end while engaging a shoulder thereon and has a screw engagement with the first pipe end, a gear member on the collar and means on one of the pipe ends for the engagement of a key having a pinion

thereon for engagement with the gear member on the collar whereby rotation of the key will effect rotation of the collar and hence drawing of the two pipe ends together by engagement of the collar with the shoulder on the second pipe end.

2. A pipe coupling as claimed in Claim 1, in which more than one key engaging means is provided around the pipe end so that the key may be fitted at various points as may be convenient.

3. A pipe coupling as claimed in Claim 1 or 2, in which the key engaging means are provided in the first pipe end.

4. A pipe coupling as claimed in any of the preceding claims, in which the gears are of the bevel type.

5. A pipe coupling as claimed in any of the preceding claims, in which the key is engaged by both pipe ends.

6. A pipe coupling as claimed in any of the preceding claims, in which the key is adapted to be disposed transversely of the pipe ends and has a worm gear engagement with the collar.

7. A pipe coupling as claimed in any of the preceding claims, in which the coupling is adapted to be locked by a pin passed through suitably aligned holes in the collar and in one of the pipe ends.

8. A pipe coupling as claimed in any of the preceding Claims 1 to 6 inclusive, in which the coupling is adapted to be locked by means of a false key member having only, say, two teeth cut in the pinion and locked in position, e.g., by a split pin.

9. A pipe coupling substantially as described with reference to and as shown in Figures 1 and 2 of the accompanying drawings.

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#### PROVISIONAL SPECIFICATION.

#### Improvements in or relating to Pipe Couplings.

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This invention relates to pipe couplings.

In certain applications, for example in the brewing industry, pipe couplings are used which have to be screwed up and unscrewed very frequently. In such applications damage may be caused to the coupling by repeated use, for example, of a wooden mallet, for tightening-up the coupling.

It is an object of the invention to provide a coupling suitable for use in situations where one coupling must be screwed up and unscrewed frequently.

The invention consists of a pipe coupling

having the members to be coupled to be brought together by a screwing action, in which the screwing action is adapted to be effected by the rotation of inter-engaging gear members.

By this means a satisfactory mechanical advantage can be obtained ensuring effective coupling while substantially reducing the risk of damage to the coupling.

Various arrangements for providing the gear action may be used, and some of these will be described by way of example.

In one arrangement, one pipe end to be connected up is fitted with an externally threaded union piece which is soldered thereto. The other pipe end to be coupled is fitted with a union piece soldered thereto, 11'

adapted to inter-engage with the first union piece to form a sealed union.

5 To bring the two ends together an internally threaded coupling member which fits around the second union piece in the form of a loose collar is adapted to screw over the externally threaded union piece, while engaging a shoulder on the second union piece, thereby drawing the two union pieces together to effect the seal.

10 As so far detailed, the arrangement is of known construction.

15 According to the invention, for the purpose of rotating the collar, the latter is formed with a gear and an associated union piece is provided with a socket or projection which may be engaged by a key having formed thereon a gear and pinion so that the two gears mesh and rotation of the handle of the key effects rotation of the collar.

20 More than one socket or projection may be provided so that the key may be fitted in at various points around the pipe, as may be convenient.

25 In an embodiment the gears are of the bevel type and a socket for the key is on the union piece carrying the collar.

30 In order to ensure that the key is held firmly in position, in addition to the socket a slotted bracket may be provided on the union piece in which the stem of the key may engage so that the bevel gear of the key is held between the bracket and the

socket and prevented from turning in the plane of the pipe.

Alternatively, the key pinion could be inserted between the collar and a bevel gear fixed to the union piece carrying the collar, in which case the key itself would travel round the pipe.

40 In a further embodiment of the invention, the collar instead of being formed with a bevel gear, is formed with a spur gear around its circumference and the socket for the key is formed on a radially projecting part of the externally threaded union piece. The key itself has a spur gear pinion near its end for meshing with the collar gear and a cranked arm at right angles thereto. The end of the key engages in the socket to hold the key for the screwing or unscrewing action.

45 In this embodiment also a slotted bracket may be provided on the union piece which carries the collar, to ensure that the pinion of the key is kept in mesh with the collar.

50 In yet a further embodiment, the key instead of being radially disposed, is arranged to be held across the pipe union piece and to have a worm gear engagement with the collar.

Various other modifications may be made within the scope of the invention.

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*This drawing is a reproduction of  
the Original on a reduced scale.*

